MDA-8000 DIO
User Manual

Warranty

All products manufactured by Maxthermo-Gitta are under warranty regarding defective materials for a period of one year from the date of delivery to the original purchaser.

Warning

Maxthermo-Gitta assumes no liability for damages resulting from the use of this product. Maxthermo-Gitta reserves the right to change this manual at any time without notification.

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Table of Contents

1. Introduction ---------- 1

1.1 Pin Assignment ---------- 1

1.2 Specifications ---------- 2

1.3 Internal I/O Struction ---------- 4

1.4 Wire Connections ---------- 5

1.5 Dimensions ---------- 7

2. Communication Protocol ---------- 7

A.1 INIT Mode ---------- 7

1. Introduction

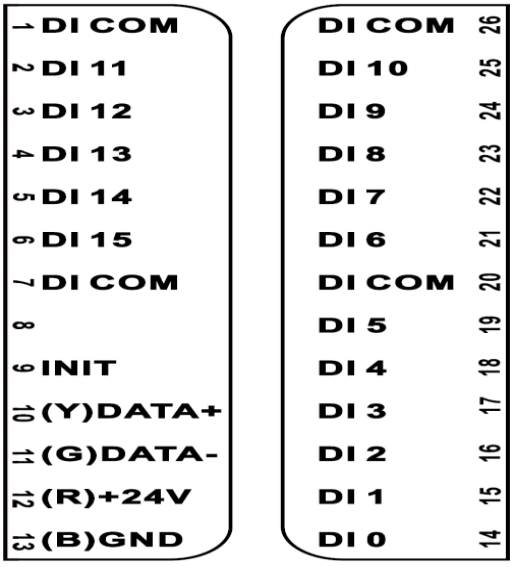
The MDA-8000 series is a family of network data acquisition and control modules, providing analog-to-digital, digital-to-analog, digital input/output and other functions. The modules can be remotely controlled using a set of commands, which we call the MODBUS protocol. Communication between the module and the host is in RTU format via an RS-485 bi-directional serial bus standard. Baud Rates are software programmable and transmission speeds of up to 115.2 Kbps can be selected.

The MDA-8000 DIO modules support photo-isolated digital input, photo-isolated digital input and relay contact output.

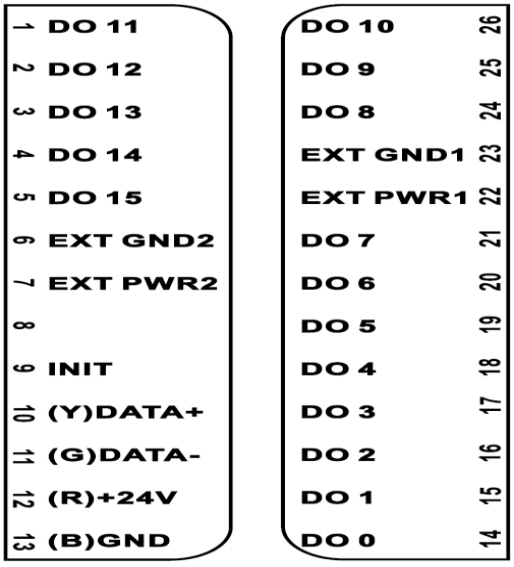
◎ For details of INIT mode operation, please refer to Section A.1 INIT Mode.

1.1 Pin Assignment

MDA-8316:



MDA-8416:



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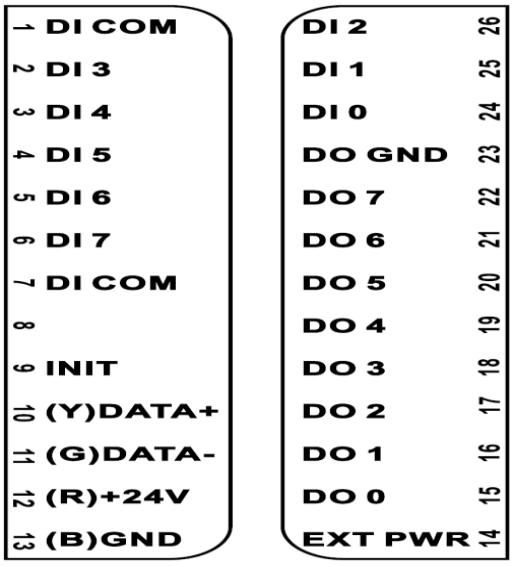

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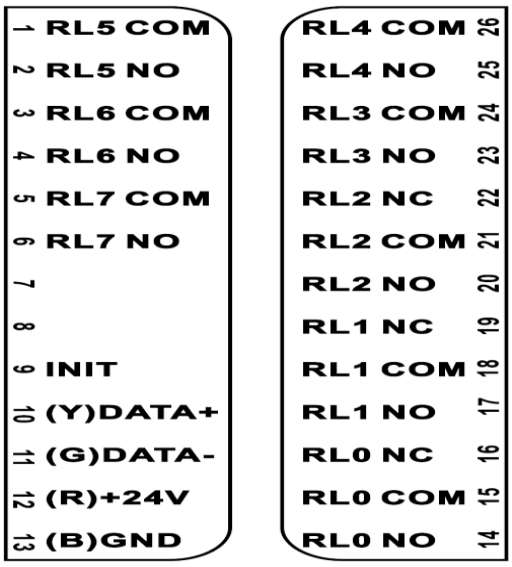


1.2 Specifications

System Specification:

Model	**MDA-8316**	**MDA-8416**	**MDA-8508**	**MDA-8708**
Communication				
Interface	RS-485			
Format	N, 8, 1			
Baud Rate	9600~115200 bps			
Protocol	Modbus RTU			
LED Indicator				
Power Indicator	1			
Communication Indicator	1			
I/O Indicator	16			8
Isolation				
Voltage	3000V DC			
Power				
Input Range	24V DC ±10%			
Consumption	Approx. 1W			
Reverse Polarity Protection	With			
Environment				
Operating Temperature	-25~+75°C			
Storage Temperature	-40~+85°C			
Humidity	10~95% RH, Non-condensing			

I/O Specification:

Model	**MDA-8316**
Digital Input	
Channels	16 (Sink / Source)
Input Type	Isolated with Common Power or Ground
Off Voltage Level	+1V Max.
On Voltage Level	+4V to +30V
Input Impedance	3KΩ

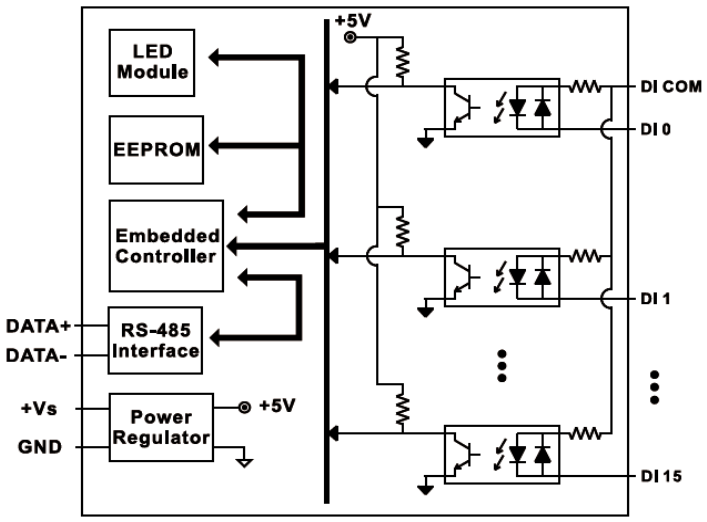
Model	**MDA-8416**
Digital Output	
Channels	16 (Sink)
Output Type	Open Collector (NPN)
Load Voltage	+3.5V to +50V
Max Load Current	100mA per Channel
Surge Protection	±3KΩ for Power Input

Model	**MDA-8508**
Digital Input	
Channels	8 (Sink / Source)
Input Type	Isolated with Common Power or Ground
Off Voltage Level	+1V Max.
On Voltage Level	+4V to +30V
Input Impedance	3KΩ
Digital Output	
Channels	8 (Sink)
Output Type	Open Collector (NPN)
Load Voltage	+3.5V to +50V
Max Load Current	100mA per Channel
Surge Protection	±3KΩ for Power Input

Model	**MDA-8708**	
Relay Output		
Channels	RL0~RL2	RL3~RL7
Contact Type	1 Form C	1 Form A
Rated Voltage	250V AC	250V AC
Rated Current	5A	3A
Mechanical Endurance	15 x 10^6 ops.	10 x 10^6 ops.
Electrical Endurance	10^5 ops.	10^5 ops.

1.3 Internal I/O Struction

MDA-8316:



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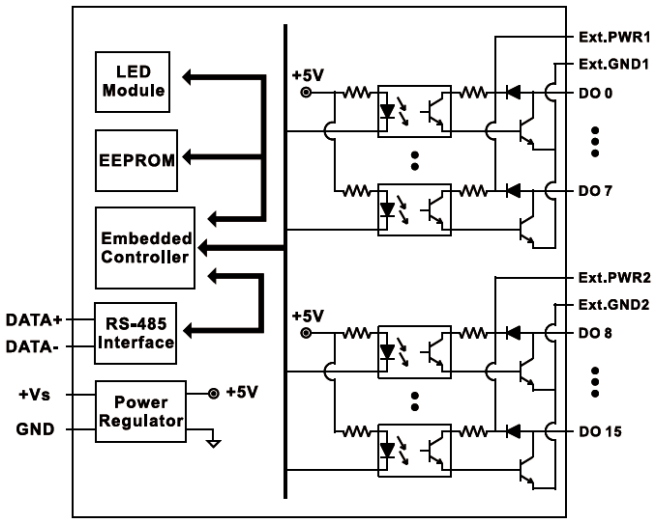

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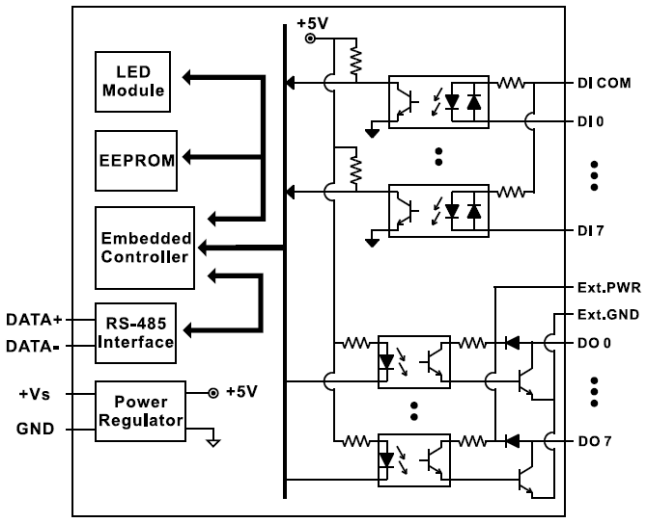

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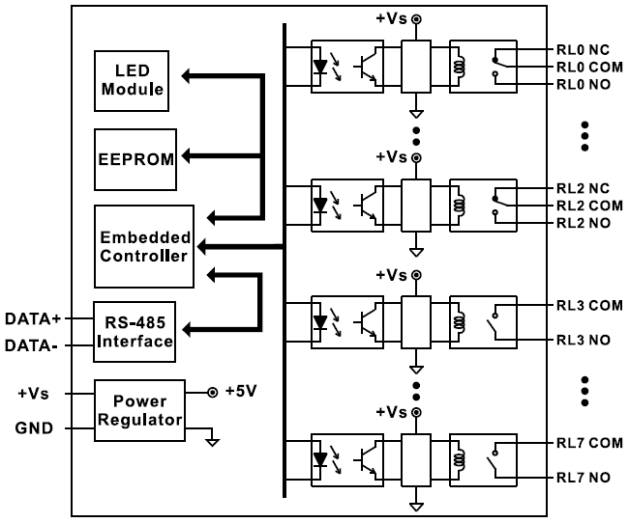
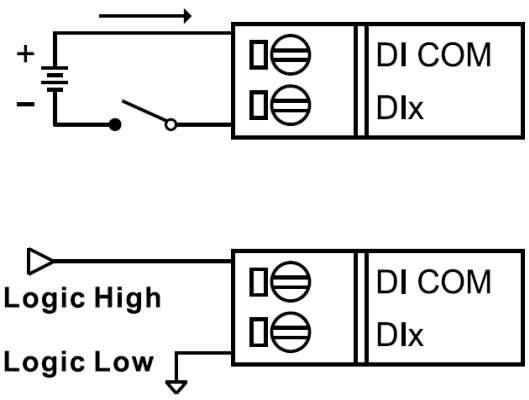
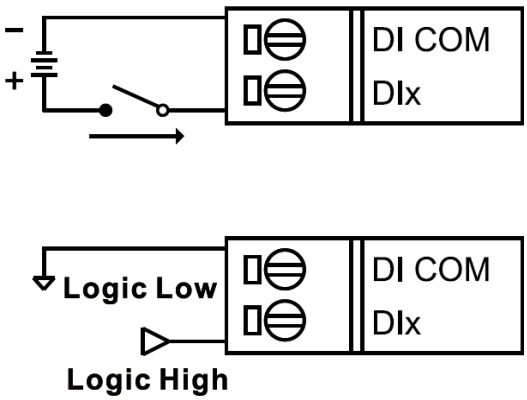


1.4 Wire Connections

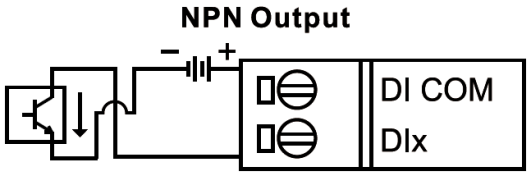
MDA-8316:

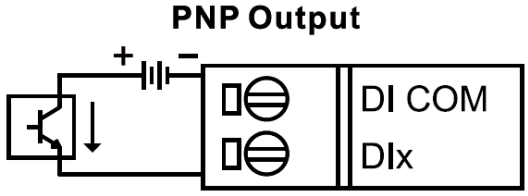
Dry Contact





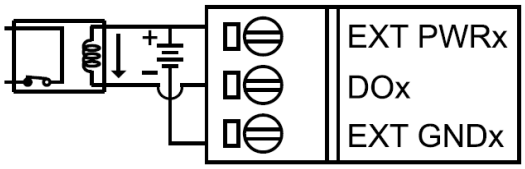
TTL / CMOS



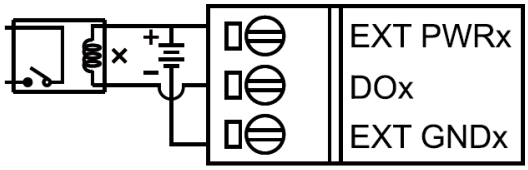


MDA-8416:

Drive Relay

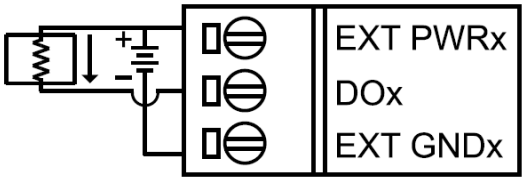


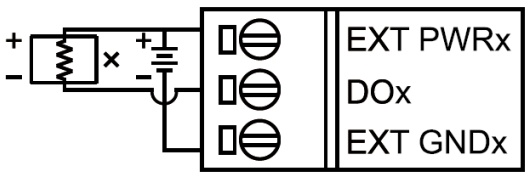
Relay ON



Relay OFF

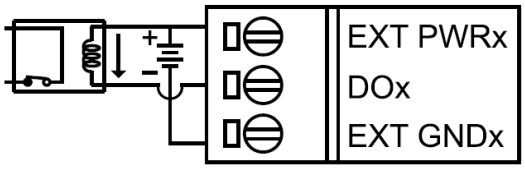
Resistance Load



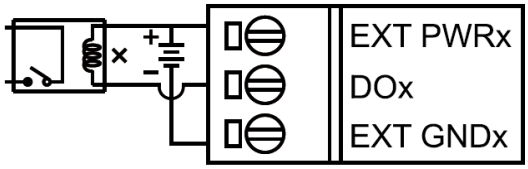


MDA-8508:

Dry Contact Signal Input

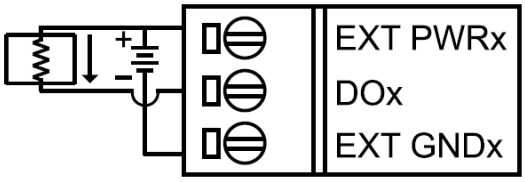


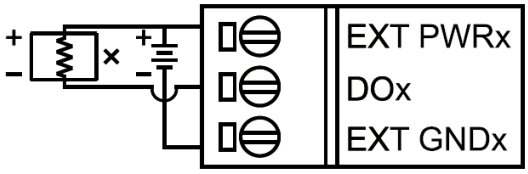
Relay ON



Relay OFF

Resistance Load

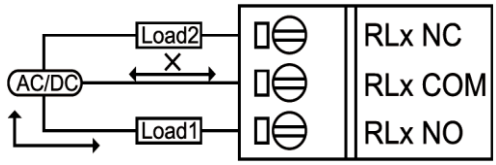




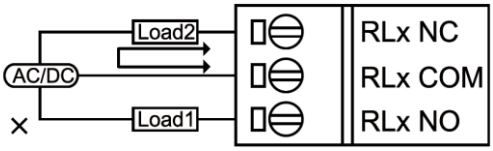
MDA-8708:

Relay Output in RL0~RL2

Relay ON

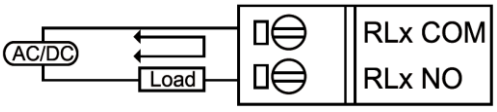


Relay OFF

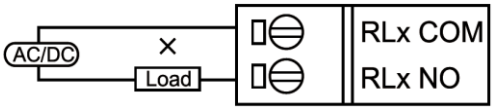


Relay Output in RL3~RL7

Relay ON

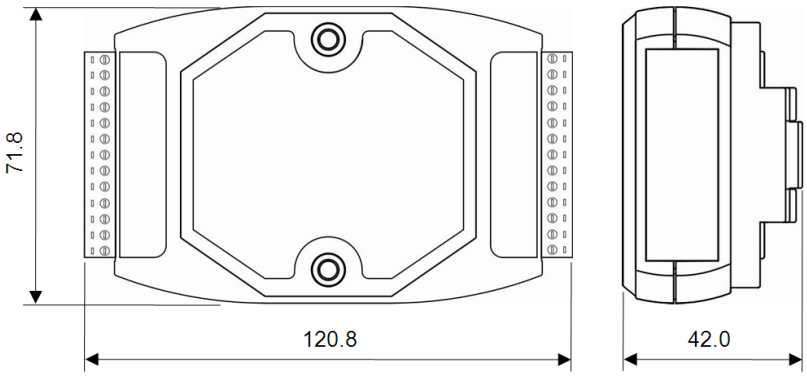


Relay OFF



1.5 Dimensions

The dimensions of the MDA-8316 / MDA-8416 / MDA-8508 / MDA-8708 are as shown below.



Unit : mm

2. Communication Protocol

Interface

RS-485

Baud Rate

9600 57600

19200 115200

38400

Data Frame

Data bits = 8

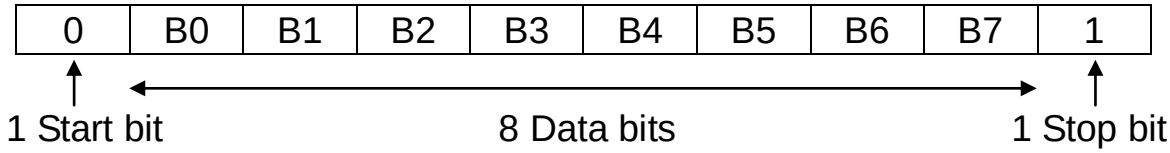
Parity = None

Start bit = 1

Stop bit = 1

Data Format

MODBUS RTU Protocol



PARA	INDEX	Description		Attribute
Address	00	Range : 1~255		R/W
Baud Rate	01	0: 9600 / 1: 19200 / 2: 38400 / 3: 57600 / 4: 115200		R/W
DI0~DI15	02	MDA-8316	MDA-8508 (DI0~DI7 / DO0~DO7)	R
DO0~DO15	03	MDA-8416		R/W
RL0~RL7	04	MDA-8708		R/W

A.1 INIT Mode

INIT mode: To return to the ex-factory parameters.

When users forgot the previous settings and is unable to use the module, it is able to use this mode to return to the initial setting.

Ex-factory settings as below:

Address: 1 / Baud Rate: 9600

Operation: When the module is powered on, please short “13 (B)GND pin” and " 9 INIT pin" then power off the module. When the module is powered on again, it will return to the ex-factory setting.